

REMARKS

Favorable reconsideration of this application is respectfully requested.

Claims 1-12 and 14-20 are pending in this application. Claim 13 is herein canceled without prejudice, features from claim 13 being added to independent claim 12, with additional clarifications, as discussed below. Claims 1 and 20 are also herein amended. Applicant submits no new matter is added.

Claims 1-19 were objected to for informalities. Claims 1-3, 6-7, 12, 14, and 16-19 were rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. patent 7,098,685 to Agrawal et al. (herein "Agrawal") in view of U.S. patent 7,099,278 to Momtaz. Claims 4-5 and 8-11 were rejected under 35 U.S.C. § 103(a) as unpatentable over Agrawal and Momtaz as applied to claim 1, and further in view of U.S. patent application publication 2003/0196139 A1 to Evans. Claims 13 and 15 were rejected under 35 U.S.C. § 103(a) as unpatentable over Agrawal and Momtaz as applied to claims 1 and 12, and further in view of U.S. patent 5,742,798 to Goldrian. Claim 20 was rejected under 35 U.S.C. § 103(a) as unpatentable over Agrawal in view of Goldrian and further in view of U.S. patent application publication 2004/0228396 A1 to Wood, Jr. (herein "Wood"). Claim 20 was rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. patent application publication 2003/0179771 A1 to Chan et al. (herein "Chan") and further in view of Wood. Those objections and rejections are traversed by the present response as now discussed.

Addressing first the objection to claims 1 and 19, each of those claims is amended by the present response to delete the phrase "in a normal operation and a first test operation", to the address the objection thereto.

Addressing now the above-noted prior art rejections based on Agrawal in view of Momtaz and further in view of Evans, Goldrian, and Wood, those rejections are traversed by the present response, as now discussed.

Each of the claims as currently written is amended by the present response to clarify features recited therein. Each of the independent claims now particularly clarifies that in the claimed first and second transmitters, the parallel data is converted into serial data with a clock modulated by a first clock data recovery circuit “with an external phase control, independent of the received serial data in the first clock data recovery circuit” in a second test operation. Similarly, the second transmitter converts the parallel data into the serial data synchronized with the clock modulated by a second clock data recovery circuit “with an external phase control, independent of the received serial data in the second clock data recovery circuit” in the first test operations. Independent claims 1 and 12 now also further recite “the first clock data recovery circuit being tested in the first test operation, the second clock data recovery circuit being tested in the second test operation”.

Thereby, independent claim 1 is amended to clarify modulation by first and second serializers is performed based on an external phase control, which features are believed to be clear from the original specification at, for example, page 14, line 7-10 and 23-25. Independent claim 1 further clarifies details of the first and second test operations, as supported in the specification at, for example, page 13, line 17-18 and page 14, lines 18-21. Independent claims 1, 12, and 20 further recite the modulated clock in the first test operation is independent of the received serial data in the second clock data recovery circuit, and the modulated clock in the second test operation is independent of the received serial data in the first clock data recovery circuit, as supported by the original specification for example at page 14, lines 3-17, and page 14, line 18 to page 15, line 8.

The above-noted features clarified in the claims are believed to also clearly distinguish over the applied art to Agrawal in view of Momtaz, and further in view of Evans, Goldrian and Wood, as now discussed.

The outstanding rejection recognizes Agrawal fails to disclose “a first transmitter, which converts the parallel data into the serial data synchronized with the clock generated by the first clock data recovery circuit in a second test operation; and a second transmitter, which converts the parallel data into the serial data synchronized with the clock generated by the second clock data recovery circuit in the first test operation”.¹ To overcome such recognized deficiencies the outstanding rejection cites Momtaz. Applicant submits Momtaz does not cure the deficiencies in Agrawal and does not disclose or suggest the features recited and clarified in the claims.

According to the claims as currently written, the clock generated in the second test operation is modulated with an external phase control. Therefore, the modulated clock is independent of a received serial data in a first clock data recovery circuit. That is, in the second test operation the first clock data recovery circuit can generate a clock for a test without externally receiving serial data in the first receiver.

Moreover, as clarified in the claims, the clock generated in the first test operation is also modulated with the external phase control. Therefore, the modulated clock is independent of the received serial data in a second clock data recovery circuit. That is, in the first test operation the second clock data recovery circuit can generate a clock for a test without externally receiving serial data in a second receiver.

In contrast to the above-noted features, according to the configuration of Momtaz, the clock and data recovery 304 generate a clock 306 ***based on the received data*** 324 in a test, as evident from Momtaz at column 5, line 6 et. seq. That is, in Momtaz the clock 306 in the test operation is dependent on the received data 324. In contrast to that operation in Momtaz, in the claims as written the clock in both the first and second test operations is modulated with an external phase control, and is ***independent of a received serial data***.

¹ Office Action of October 2, 2008, page 5, second full paragraph.

Thereby, applicant submits Momtaz does not disclose or suggest the first and second test operations as currently claimed, and thereby Momtaz cannot cure the recognized deficiencies of Agrawal with respect to such claimed features.

Moreover, applicant submits no disclosures in Evans, Goldrian, or Wood were cited with respect to the above-noted features, and no disclosures in Evans, Goldrian or Wood are believed to cure the above-noted deficiencies in Momtaz.

Applicant also notes with respect to amended independent claim 12, which now incorporates the limitations from previously pending dependent claim 13, Goldrian, which was applied against previously pending dependent claim 13, is further deficient. As pointed out in the previously filed Amendment, according to Goldrian a signal CLOCK_A in Fig. 2, for example, is generated based on the DATA_B transmitted from a driver module 211, and the signal CLOCK_B is generated based on the DATA_A from a driver module 201, see Goldrian at column 5, lines 13-45. Thereby, in Goldrian the clock is dependent on received data, and thus Goldrian also does not disclose or suggest the first and second test operations as currently claimed.

Further, with respect to the rejection of Claim 20 based on Chan in view of Goldrian and further in view of Wood, applicant also traverses that rejection.

As noted above independent 20 is also amended to clarify the phase-changed clocks in testing both the first and second receiver are independent of received serial data in the second clock data recovery circuit, which applicant submits distinguishes over the applied art. In the respect Chan was recognized in the Office Action as “fail[ing] to explicitly teach analyzing a state of the first clock data recovery circuit on the basis of phase control information of the clock changed by the second clock data recovery circuit, and phase control information when the first clock data recovery circuit recovers the clock”.² To overcome

² Office Action of October 2, 2008, middle of page 19.

such recognized deficiencies in Chan the outstanding rejection again cited Goldrian, but as noted above Goldrian is deficient with respect to the above-noted features as in Goldrian each of the CLOCK_A and CLOCK_B and are dependent on received data, see DATA_B and DATA_A for example in Fig. 2. Thereby, Goldrian cannot cure the above-noted deficiencies of Chan with respect to the above-noted claimed features, and thereby independent claim 20 also distinguishes over Chan in view of Goldrian and further in view of Wood.

In view of the present response, applicant respectfully submits the claims as currently written positively recite features neither taught nor suggested by the applied art, and thus are allowable over the applied art.

As no other issues are pending in this application, it is respectfully submitted that the present application is now in condition for allowance, and it is hereby respectfully requested that this case be passed to issue.

Respectfully submitted,

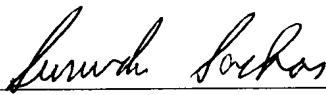
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